

**IN THE SPECIFICATION:**

Please amend the paragraph on page 1, line 5 as follows:

The present invention relates to a bearing member manufacturing method ~~[[of]]~~ for manufacturing a bearing member for rotatably supporting a rotational shaft. The bearing member is intended to be included in a bearing mechanism for supporting a rotational shaft, such as the crankshaft of an internal combustion engine.

Please amend the paragraph on page 1, line 12 as follows:

Most bearing members for rotatably supporting the crankshafts of internal combustion engines are formed of a material different from that forming the crankshafts and are formed of a light alloy ~~in view of~~ for achieving weight reduction. A gap is formed between the crankshaft and the bearing member due to the difference in thermal expansion between the bearing member and the crankshaft when the crankshaft operates in a hot atmosphere heated by combustion heat generated by the internal combustion engine, causing generation of vibration and noise.

Please amend the paragraph beginning on page 1, line 22 as follows:

Various bearing members formed of light alloys and capable of reducing the gap ~~due to~~ as a result of the difference in thermal expansion have been provided. A bearing cap (or a crankshaft lower case) disclosed in JP 2002-61538 A has a surface layer, i.e., a surface part formed of an aluminum alloy that comes into sliding contact with the journal of a crankshaft, and

a framing part of an aluminum composite material framing the surface part of the aluminum alloy. The aluminum composite material has a coefficient of thermal expansion greater than that of an iron alloy forming the crankshaft and smaller than that of the aluminum alloy forming the surface part. Therefore, the gap between the crankshaft and the bearing cap (or the crankshaft lower case) ~~due to~~ resulting from the difference in thermal expansion between the crankshaft and the bearing cap (or the crankshaft lower case) is small and hence noise and vibration are reduced. To form this bearing cap (or this crankshaft lower case), a preform is prepared by compressing a mixture prepared by mixing particles or fibers, and an additive, such as silicon dioxide, the preform is placed in a mold, and then a molten aluminum alloy is poured for die casting into the mold. Thus, the preform is impregnated with the aluminum alloy to form a framing part of the aluminum composite material. Then, a surface part of an aluminum alloy is formed on the framing part to complete the bearing cap (or the crankshaft lower case).

Please amend the paragraph beginning on page 2, line 23 as follows:

The technique relating to the bearing cap (or the crankshaft lower case) disclosed in JP 2002-61538 A needs a casting machine provided with a mold forming one bearing cap (or the crankshaft lower case) having a semicylindrical recess by integrally combining the surface part and the framing part. Therefore, the bearing cap (or the crankshaft lower case) is costly.

[[Since]] Because the impregnation of the preform having a volume greater than the surface part with the aluminum alloy and the formation of the surface layer of the aluminum alloy need to be

achieved simultaneously, it is difficult to ensure smooth flow of the molten aluminum alloy to impregnate the preform entirely with the molten aluminum alloy and to form the surface part of the aluminum alloy. Consequently, bearing caps (or crankshaft lower cases) are liable to differ from each other in quality.

Please amend the paragraph on page 3, line 13 as follows:

The present invention has been made in view of the foregoing problems and it is therefore an object of the present invention to provide a ~~baring~~ bearing member manufacturing method of manufacturing a bearing member formed of light alloys and having stable ability to support a rotational shaft, capable of manufacturing the bearing member at low cost.

Please amend the paragraph beginning on page 3, line 21 as follows:

According to the present invention, there is provided a bearing member manufacturing method ~~[[of]]~~ for manufacturing a bearing member having a body part formed of a first material of a light alloy, and a bearing part formed of a second material of a light?alloy?base material different from that forming the body part, having a bearing surface of a semicircular cross section and integrally combined with the body part, wherein the manufacturing method includes: a casting step of forming a primary workpiece having at least one semifinished workpiece including one first workpiece having a cylindrical ~~inside~~ inner surface serving as the bearing surface, and one second workpiece by integrally combining the first workpiece and the second

workpiece in a mold by casting; and a dividing step of dividing the primary workpiece removed from the mold into halves along a center plane including a center axis of the inside surface to obtain two secondary workpieces for forming two bearing members.

Please amend the paragraph on page 4, line 13 as follows:

[[Since]] Because the two secondary workpieces for forming the two bearing members are formed by dividing the cast semifinished workpiece into halves, it is not necessary to use one mold for forming one bearing member. The two secondary workpieces can be formed by dividing the single semifinished workpiece formed by combining the single semifinished body part made of the first material, i.e., the light alloy, and the single semifinished bearing part having a circular hole and made of the second material, i.e., the light alloy in half, the quality range in which the qualities of the secondary workpieces are distributed can be narrowed.

Please amend the paragraph beginning on page 4, line 24 as follows:

Thus, the present invention has the following effects. The bearing member manufacturing method ~~needs~~ requires a reduced number of molds for forming bearing members, is capable of manufacturing bearing members at an improved yield, and reduces the cost of the lightweight bearing members formed of two types of light alloys. [[Since]] Because the quality range in which the qualities of the secondary workpieces are distributed is narrowed and hence qualities of the bearing members are distributed in the narrow quality range, the bearing members

exercise a stable supporting function.

Please amend the paragraph on page 5, line 9 as follows:

The bearing member manufacturing method according to the present invention may include a first workpiece forming step of forming the cylindrical first workpiece of the second material, wherein the casting step includes steps of placing at least one of the first ~~workpiece~~ workpieces formed by the first workpiece forming process in the mold, pouring the molten first material into the mold and metallurgically bonding together the first workpiece and the second workpiece along the interface between the first workpiece and the second workpiece.

Please amend the paragraph on page 5, line 18 as follows:

[[Since]] Because the first workpiece is formed before being combined with the second workpiece by casting, and the first workpiece and the second workpiece are metallurgically bonded together along the interface, the first and the second workpiece can be firmly bonded together, and the variation of the quality of the semifinished workpiece attributable to enclosing the first workpiece in the second workpiece by casting can be suppressed.

Please amend the paragraph on page 6, line 1 as follows:

Consequently, the following effect is provided. [[Since]] Because the variation of the quality of the semifinished workpiece is suppressed, the function of the bearing member to

support a rotational shaft can be stabilized.

Please amend the paragraph on page 6, line 12 as follows:

[[Since]] Because the molten first alloy flows through the parts of the mold corresponding to the four corners of the semifinished workpiece having a substantially square shape into the cavity, the molten first material flows uniformly around the first workpiece in the cavity, and thereby the quality of the semifinished workpiece and hence that of the secondary workpiece can be improved, which is effective in stabilizing the function of the bearing member to support a rotational shaft.

Please amend the paragraph on page 7, line 12 as follows:

[[Since]] Because the predetermined number of semifinished workpieces can be simultaneously formed in the mold, the number of necessary molds can be further decreased.

[[Since]] Because a number of secondary workpieces twice the number of the semifinished workpieces can be formed from the single primary workpiece, the quality range in which the qualities of the secondary workpieces are distributed can be further narrowed. Consequently, effects on reducing the cost of the bearing member and on the stabilization of the function to support a rotational shaft can be further promoted.

Please amend the subheading on page 10, line 13 as follows:

DESCRIPTION OF ~~THE PREFERRED~~ EXEMPLARY EMBODIMENTS

Please amend the paragraph on page 10, line 14:

~~Preferred~~ Exemplary embodiments of the present invention will be described with reference to the accompanying drawings.

Please amend the paragraph on page 14, line 9 as follows:

The bearing part 22 has the shape of a semicylinder formed by dividing a cylinder having a predetermined length  $t_1$  and a predetermined thickness  $t_2$  into halves along a plane including the center axis  $L_2$  of the cylinder. Joining surfaces 22c and 22d extend[[s]] on the opposite sides, respectively, of the semicircular hollow 11b.

Please amend the paragraph on page 21, line 4 as follows:

The second workpiece 32 formed of the first material, and the first workpiece 30 formed of the second material and having the bearing surface 23, i.e., the circular inside surface 30a, for supporting the journal of the crankshaft 3 are combined integrally by casting to form the primary workpiece 34 having at least one semifinished workpiece 33 consisting of the one first workpiece 30 and the one second workpiece 32. The semifinished workpiece 33 is divided into halves along the center plate P2 to obtain the two secondary workpieces 35 for forming the bearing caps

20. The two secondary ~~workpiece~~ workpieces 35 for forming the bearing caps 20 are formed by casting the semifinished workpiece 33 in the single mold, and hence a mold does not need to be formed for each bearing cap 20. The number of molds necessary for forming the bearing caps 20 can be reduced, yield can be improved, and the lightweight bearing cap 20 consisting of parts respectively formed of two types of light-metal-base materials can be manufactured at a low cost. [[Since]] Because the two secondary workpieces 35 are formed by dividing the one semifinished workpiece 33 formed by integrally combining the one second workpiece 32 formed of the first material, i.e., a light-metal-base material, and the one first workpiece 30 formed of the second material, i.e., a light-metal-base material, into halves, the range of distribution of the qualities of the secondary workpiece 35 and hence that of distribution of the qualities of the bearing caps 20 can be narrowed, and thereby the functions of the bearing caps 20 to support the crankshaft 3 can be stabilized.

Please amend the paragraph on page 22, line 6 as follows:

The second material forming the bearing part 22 having the bearing surface 23 of the bearing cap 20 consisting of the cap body 21 and the bearing part 22 has a coefficient of linear expansion closer to that of the material forming the crankshaft 3 than that of the first material forming the cap body 21. Therefore, the gap that is formed while the internal combustion engine E is in operation between the crankshaft 3 and the bearing part 22 due to the difference in thermal expansion between the crankshaft 3 and the bearing part 22 is small and hence noise and



vibration that are generated by the rotating crankshaft 3 can be reduced. [[Since]] Because the qualities of the plurality of bearing caps 20 of the bearing mechanism are distributed ~~distribute~~ in a narrow range, the bearing mechanism has an improved effect on reducing vibration and noise.

Please amend the paragraph beginning on page 22, line 20 as follows:

[[Since]] Because the semifinished workpiece 33 formed by bonding together the first workpiece 30 and the second workpiece 32 by the casting process that places the first workpiece 30 in the mold, and pours the molten metal of the first material into the mold, the boundary surface parts of the first workpiece 30 and the second workpiece 32 are metallurgically bonded together. Thus, the first workpiece 30 and the second workpiece 32 are firmly bonded together, the range of variation of the quality of the semifinished workpiece 33 attributable to the insertion of the first workpiece 30 in the second workpiece 32 can be narrowed, and thereby the functions of the bearing caps 20 to support the crankshaft 3 can be stabilized. The formation of the cylindrical workpiece 31 for forming the first workpiece 30 by extrusion contributes to the cost reduction of the bearing cap 20.

Please amend the paragraph beginning on page 23, line 19 as follows:

[[Since]] Because the molten metal flows through the gates 61 to 64 into the cavity 56 flows in the cavity 56 in the swirling current F around the first workpiece 30, the outside surface of the first workpiece 30 and the inside surface of the second workpiece 32 can be uniformly

metallurgically bonded. Thus, the first workpiece 30 and the second workpiece 32 are bonded by high bond strength, which is effective in stabilizing the function of the bearing member to support the crankshaft 3. The arrangement of the four gates 61 to 64 substantially in point symmetry with respect to the center axis L2 passing the center of the cavity 56 is effective in generating the swirling current F.